Annual Report to the Legislature and the California Integrated Waste Management Board
Senate Bill 876
Waste and Used Tires

Purpose

This report was prepared in accordance with Section 20 of Chapter 838, Statutes of 1999, (SB 876, Escutia), which amends and adds numerous sections to the Public Resources Code including Section 42889.3, which states:

> On or before January 1 of each year, the Department of Transportation shall report to the Legislature and the board on the use of waste tires in transportation and civil engineering projects during the previous five years, including, but not limited to, the approximate number of tires used every year, and the types and location of these projects.

Background

The State of California generated approximately 33 million waste tires last year. In addition, nearly 2 million waste tires were imported into the State. Of these tires, roughly 25 million were diverted from landfills. Without significant expansion of the existing markets for waste tire usage such as rubberized asphalt concrete, playground mats or other surfacing, civil engineering applications and tire derived fuels, the tire stockpile (both legal and illegal) and the environmental issues they pose will continue to grow.

Department's Efforts

The California Department of Transportation (Department), in an effort to be a good steward of our resources and environment, has established a variety of uses for recycled content tire products and civil engineering applications in our transportation projects. One of these efforts is the use of Rubberized Asphalt Concrete (RAC) on many of our projects, see Appendix 1. RAC is different than conventional asphalt concrete in that it incorporates the use of crumb rubber from waste tires in the process.

Use of tires as a fuel supplement in cement kilns and cogeneration facilities constitutes a large market for waste tires, both nationally and in California. For example, of the 33 million waste tires generated in 2001, approximately 4.2

million were used as Tire Derived Fuel (TDF) in various cement kilns in California. These kilns produce cement, which is used to manufacture concrete that the Department incorporates into many of our construction projects. The Department uses an average of 378,000 tons of cement in highway projects each year. Of the estimated 13 million tons of cement that will be produced in California this year, the Department's share is approximately three percent of the total market.

Waste Tires Used in Department of Transportation Projects				
Year	**Number of Tires Used in RAC Projects[1]**	**Number of Tires Used as Lightweight Fill[1]**	**Number of Tire Used as TDF[3]**	**Totals**
1998	621,284		90,000	711,284
1999	777,389		123,000	900,389
2000	2,698,778		126,000	2,824,778
2001	1,178,953	660,000[4]	126,000	1,964,953
2002	500,000[2]	58,000[5]	126,000	684,000
Subtotal	5,776,404	718,000	591,000	**7,085,404**

[1] Based on projects listed in Appendix 1.

[2] Actual quantity through the third quarter is 410,968 tires with an estimated amount of 500,000 tires projected through the end of the calendar year.

[3] Based on the Board's "California Waste Tire Generation, Diversion, and Disposal, 1990 – 2001" summary, which states the total number of tires used as TDF in cement kilns in California as follows: 1998 - 3.0 million tires; 1999 – 4.1 million tires; 2000 - 2002 (projected) - 4.2 million tires each year. These values were then multiplied by the Department's 3% share of the market to determine the number of tires used as TDF.

[4] This amount represents one project, which utilizes a new and innovative use of tire shreds as lightweight fill. If this project continues to show that this is a good engineering use of tires, then this experimental application can be adopted as a standard tool. Additional pilot projects are being aggressively pursued.

[5] Similar to footnote 4, this is another experimental use of tires as lightweight fill behind a retaining wall.

The Department has also worked in partnership with the California Integrated Waste Management Board (Board) on projects that promote the innovative use of shredded waste tires in highway construction. In 2001, the Department constructed an embankment made of lightweight fill from shredded waste tires on the Dixon Landing Project in Santa Clara County. This year, the Department is anticipating the installation of tire shreds as lightweight backfill material behind a retaining wall on Route 91 in Riverside County. Here, the Department will test a section of tire shred installation to measure the potential reduced lateral pressure on the retaining wall. Reductions in pressure on the retaining wall related to the use of tire shreds may allow for a significant reduction in the retaining wall mass

in future designs, potentially reducing retaining wall costs. The retaining wall test section will be 260 feet in length and will utilize approximately 58,000 shredded tires.

Notice is directed to the values listed in the table for the year 2000 and subsequent years. This increased use of RAC is a result of the increased allocation of funds by the California Transportation Commission to the Department to expedite much needed roadway rehabilitation work. This additional work consisted of all types of pavement rehabilitation including but not limited to the placement of concrete pavement, conventional asphalt concrete pavement and RAC.

Subsequent years saw a decrease in funding of pavement rehabilitation projects for both RAC and conventional asphalt concrete as shown in Appendix 2. A very slight increase in concrete pavement usage occurred in 2002 due to the increased need for rehabilitation of urban pavements, which typically utilize concrete pavement.

Summary

The Department continues to help reduce the number of waste tires entering California's landfills. The Department has promoted the use of rubberized asphalt concrete as roadway pavement and is continually looking for innovative uses of recycled waste tires for our transportation projects.

The Department's use of RAC is largely dependent upon the available funding in the State Highway Operational Protection Plan (SHOPP) for pavement projects. Although the current availability of funding will reduce the number of RAC projects that will be constructed this year as well as in future years, the Department will continue to optimize the use of RAC as much as practicable.

It should be noted that there has been a substantial increase in the investment of State and Federal funds on local roads. The combined funding from the local share of the State Transportation Improvement Program (STIP), congestion relief programs, and gas tax revenue amount to over $2 billion annually for local rehabilitation projects. Although the Department has no way to accurately identify the use of RAC on local roads, it is a likely candidate for pavement rehabilitation.

The Department is dedicated to the stewardship of our natural resources and will continue to look for opportunities for innovative uses of recycled products in our transportation projects.